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44.

(Amended) A *Brassicaceae* plant containing:

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- a) a full-length coding sequence from a delta-12 fatty acid desaturase gene having at least one mutation, said at least one delta-12 gene mutation in a region encoding a His-Xaa-Xaa-Xaa-His amino acid motif; and
  - b) a full-length coding sequence from a delta-15 fatty acid desaturase gene having at least one mutation, said at least one delta-15 gene mutation in a region encoding a His-Xaa-Xaa-Xaa-His amino acid motif;

wherein said delta-12 gene mutation and said delta-15 gene mutation render the products of said delta-12 desaturase gene and said delta-15 desaturase gene, respectively, non-functional.

64. (Amended) A method for producing a *Brassicaceae* plant line, comprising the steps of:

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- a) inducing mutagenesis in cells of a starting variety of a *Brassicaceae* or *Helianthus* species;
  - b) obtaining one or more progeny plants from said cells;
  - c) identifying at least one of said progeny plants that contains a delta-15 fatty acid desaturase gene having at least one mutation, said at least one mutation in a region encoding a His-Xaa-Xaa-Xaa-His amino acid motif, wherein said at least one mutation renders the product of said delta-15 desaturase gene non-functional; and
  - d) producing said plant line from said at least one progeny plant by self- or cross-pollination, said plant line having said delta-15 gene mutation.

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(Amended) A method for identifying a mutation in a *Brassicaceae* plant, comprising:

- a) providing a *Brassicaceae* plant having a decreased  $\alpha$ -linolenic acid content as compared with a corresponding control *Brassicaceae* plant; and
- b) identifying at least one mutation in a delta-15 fatty acid desaturase gene of said plant, said at least one mutation in a region encoding a His-Xaa-Xaa-Xaa-His

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amino acid motif, wherein said mutation renders the product of said delta-15 fatty acid desaturase gene non-functional.